

CaMKI δ siRNA (h): sc-90716

BACKGROUND

The Ca²⁺/calmodulin-dependent protein kinases (CaMKs) comprise a structurally related subfamily of serine/threonine kinases. CaMKI δ (calcium/calmodulin-dependent protein kinase type 1 δ), also known as CKLiK or CaM-K1, is a 385 amino acid protein that localizes to both the nucleus and the cytoplasm and contains one protein kinase domain. Expressed in a variety of tissues with higher expression in polymorphonuclear leukocytes, CaMKI δ functions to catalyze the ATP-dependent phosphorylation of target proteins and is thought to regulate calcium-mediated granulocyte function via a calcium-triggered signaling cascade. CaMKI δ is activated by CaM, which binds to and induces a conformational change in CaMKI δ , thereby allowing CaMKK α and CaMKK β to phosphorylate and, subsequently activate CaMKI δ . Nucleotide polymorphisms in the gene encoding CaMKI δ may increase susceptibility to type 2 diabetes. Two isoforms of CaMKI δ exist due to alternative splicing events.

REFERENCES

1. Verploegen, S., et al. 2000. Identification and characterization of CKLiK, a novel granulocyte Ca²⁺/calmodulin-dependent kinase. *Blood* 96: 3215-3223.
2. Hook, S.S., et al. 2001. Ca²⁺/CaM-dependent kinases: from activation to function. *Annu. Rev. Pharmacol. Toxicol.* 41: 471-505.
3. Online Mendelian Inheritance in Man, OMIM[™]. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 607957. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>
4. Ishikawa, Y., et al. 2003. Identification and characterization of novel components of a Ca²⁺/calmodulin-dependent protein kinase cascade in HeLa cells. *FEBS Lett.* 550: 57-63.
5. Grarup, N., et al. 2008. Association testing of novel type 2 diabetes risk alleles in the JAZF1, Cdc123/CaMK1D, TSPAN8, THADA, ADAMTS-9, and NOTCH2 loci with Insulin release, Insulin sensitivity, and obesity in a population-based sample of 4,516 glucose-tolerant middle-aged Danes. *Diabetes* 57: 2534-2540.

CHROMOSOMAL LOCATION

Genetic locus: CAMK1D (human) mapping to 10p13.

PRODUCT

CaMKI δ siRNA (h) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see CaMKI δ shRNA Plasmid (h): sc-90716-SH and CaMKI δ shRNA (h) Lentiviral Particles: sc-90716-V as alternate gene silencing products.

For independent verification of CaMKI δ (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-90716A, sc-90716B and sc-90716C.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNases and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 μ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μ l of RNase-free water makes a 10 μ M solution in a 10 μ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

CaMKI δ siRNA (h) is recommended for the inhibition of CaMKI δ expression in human cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 μ M in 66 μ l. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

GENE EXPRESSION MONITORING

CaMKI δ (C-9): sc-374028 is recommended as a control antibody for monitoring of CaMKI δ gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG κ BP-HRP: sc-516102 or m-IgG κ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker[™] Molecular Weight Standards: sc-2035, UltraCruz[®] Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgG κ BP-FITC: sc-516140 or m-IgG κ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz[®] Mounting Medium: sc-24941 or UltraCruz[®] Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor CaMKI δ gene expression knockdown using RT-PCR Primer: CaMKI δ (h)-PR: sc-90716-PR (20 μ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

RESEARCH USE

For research use only, not for use in diagnostic procedures.